HYDRAULIC EXCAVATORS

**DEFINITION:** A hydraulic excavator consists of an upper carriage with hydraulically rotating upper deck (revolving 360°) and attachment, directly mounted to either a wheeled or crawler undercarriage. The front end of the excavator attachment consists either of a bucket, grapple, scrap shear, or another implement.

Excavators that are operated in scrap yards may be exposed to a wide range of external hazards during normal operation, not only to the operators but also to maintenance personnel and others nearby.

**Primary Hazards:**
- Falling and ejected objects
- Slipping and falling
- Cutting
- Pinching and crushing
- Burning and explosions

**Safety Solutions:**
- Wearing personal protective equipment
- Pre-startup inspections
- Scheduled inspections and maintenance
- Safe operating and working procedures
- Employee safety training
- Operator and maintenance training

**Pre-Start Up Procedures and Inspections:**
- Ensure that the operator is properly trained and qualified to operate the equipment
- Only authorized personnel may operate the excavator
- The operator must be mentally and physically fit, have good vision, spatial perception, adequate hearing and a quick reaction time (response)
- The operator must be completely familiar with the layout and operation of the excavator
- Identify a clear and safe approach to the machine
- The operator must know at all times the capabilities and limitations of the hydraulic excavator

This safety resource was written for the scrap industry by the scrap industry and was developed to assist you in making your scrap operation a safe place for employees, customers, and visitors. This resource covers OSHA requirements that may or may not be applicable to your operation.
Prior to every shift, the operator must perform a daily walk-around inspection of the excavator and jobsite surroundings:
- Check for loose pin and bolt connections, wear and tear items, leaks and structural damage of any kind.
- Pay close attention to any deficiencies such as clogged radiator/cooler cores, air cleaner indicator, frayed and or otherwise damaged hoses and/or hose assemblies.
- Ensure that all safety signs are installed and legible.
- Document all discrepancies on a "Daily Checklist" and immediately report any deficiencies to your maintenance department.

Never operate a defective or damaged machine.

Verify that all maintenance has been completed.

Egress and regress the excavator facing the machine using three-point stance on ladders and steps.

Ensure that all side doors and covers are unlocked but closed and secured.

Ensure that windows and mirrors are clean, and the mirrors are positioned for best possible visibility.

Adjust seat and armrests to the most comfortable position.

Make sure that the area of operation is clear of obstacles and employees.

**Starting and Operating the Excavator:**
- By sounding the horn twice, ensure that other personnel in the vicinity is aware that this machine has been started and that operation is about to commence.
- Maintain clear communication with co-workers and good visibility at all times.
- Operate machine only outdoors or in a well ventilated interior space.
- Use both of the warning signals to warn all personnel in the vicinity by sounding the horn and/or by energizing the beacon light/flasher (if applicable).
- Start the engine and allow the systems such as the engine coolant/oil and hydraulic fluid to warm up to operating temperatures.
- Test all equipment functions such as attachment/implement movements and brake systems.
- Place the excavator into the proper working position and begin operation.
- During operation make sure that the attachment or basic machine sufficiently clears buildings, power lines and other obstructions.
- Be sure to operate within the machine’s lifting capabilities at all times (see lift chart or refer to the manufacturer’s manual).
- Use only slow, progressive joystick or foot pedal movements when operating the attachment functions such as boom, stick, bucket, clamshell or other implements.
- Maintain a safe distance to basements, ditches, slopes and embankments.
Shut-Down Procedure:
- Park the excavator on level and firm ground
- Line up upper deck with undercarriage and lower the attachment completely to the ground
- Engage the parking and swing brake functions
- In case of an emergency, if the machine stops on an incline, lower the attachment completely to the ground and use blocks/rocks to keep the machine from rolling downhill
- Disengage the safety lever
- Gradually reduce the engine speed and remain in idle for three minutes before shut-off
- Work the joysticks in a circular motion to relieve system pressure
- Shut, secure and lock windows, all covers and cab door
- Climb off the excavator facing the machine and using a three-point stance
- Never jump of a machine
- Switch off the battery disconnect (if applicable) and remove the disconnect key

Maintenance Procedures:
- Always follow the manufacturer’s daily, scheduled and preventive maintenance and inspection procedures and instructions
- Follow the proper lock-out/tag-out procedures as established by your company
- Use only approved man-lifts, ladders, scaffolds, platforms or the catwalks (if applicable) of the excavator to perform any maintenance, inspection or repair procedures
- Never walk on an elevated boom or stick structure without an appropriate fall protection
- Always use fall protection when working at heights in excess of eight feet above ground
- Always use the appropriate tools to service the excavator and always wear the personnel protective equipment (PPE) as required by OSHA and jobsite regulations
- Only properly trained and authorized mechanics/technicians are allowed to maintain and repair this excavator
- When servicing this excavator never use your hands or fingers to align bolts or pins

Visitor/Vendor/Supplier Alert:
- Post safety signs that inform of all jobsite hazards
- Inform to maintain the proper and safe distance from all equipment at the jobsite
- Must be advised to observe all safety signs posted
**General Safety Instructions:**

- The operator must be made aware of the dangers and risks involved with the operation of this hydraulic excavator.

- Train every employee what each warning signal or audible alarm represents.

- Identify areas where falling or ejected debris may occur.

- Frequently check the placement of safety signs, make certain they are legible and complete. Replace missing or illegible safety signs at once.

- Instruct all employees to adhere fully to the instructions given on the safety signs.

- Identify and cordon off or mark specific areas that are prohibited to enter during machine operation.

- Ensure that trip and fall hazards are kept out of drive and walkways.

- Always follow good housekeeping procedures.

- **No one is permitted to stay underneath the excavator or its attachment**, unless it is properly supported, while the machine is being serviced.